MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY.

Professor H. H. TURNER, D.Sc., F.R.S., PRESIDENT, in the Chair.

William Allan, M.A., B.Sc., 88 Leamington Terrace, Edinburgh ;

Ernest Cuthbert Atkinson, M.A., Erwood, Beckenham, Kent ;

Colonel Arthur Henry Bagnold, R.E., Warren Wood, Shooters' Hill, S.E. ;

Rev. D. B. Marsh, D.Sc., Hamilton, Ontario, Canada ; and

William Newbold, 7 Broadwater Down, Tunbridge Wells,

were balloted for and duly elected Fellows of the Society.

The following candidate was proposed for election as a Fellow of the Society, the name of the proposer from personal knowledge being appended :

William Edward Raymond, Astronomical Observer, Sydney Observatory, New South Wales, Australia (proposed by H. C. Russell).

Sixty presents were announced as having been received since the last meeting, including, amongst others :

Galilei, Opere, Edizione Nazionale, vol. xiv., presented by the Italian Government ; H. Draper and G. W. Ritchey, Construction

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of a Silvered Glass Reflector, and on the Modern Reflecting Telescope and the Making and Testing of Optical Mirrors ; and N. S. Shaler, Comparison of the Features of the Earth and the Moon, presented by the Smithsonian Institution ; Porträtgallerie der Astronomischen Gesellschaft, presented by H. W. Tullberg ; E. T. Whittaker, a Treatise on Analytical Dynamics, presented by the author.

Twenty charts of the Astrographic Chart, presented by the Royal Observatory, Greenwich ; spectrograms on the rotation of the planets, &c. (six prints), presented by Percival Lowell.

On the Completion of the Solution of the Main Problem in the New Lunar Theory.   By Ernest W. Brown, Sc.D., F.R.S.

The completion of a laborious piece of work which has occupied many years for its execution furnishes a suitable opportunity for giving a general account of the object for which it was undertaken and of the methods by which the results have been obtained.   The problem under consideration was that of the motion of the Moon as deduced solely from the Newtonian law of gravitation.   It is limited, in the first instance, to the solution of an ideal problem in which the bodies are considered as particles, and two of them move in fixed elliptic orbits round one another.   This constitutes the "main problem."   The history of the attempts to obtain a solution with sufficient accuracy is well known, and I shall only touch on that portion of it which is directly connected with the new theory.

The original idea of the method here adopted to obtain a complete solution—as, indeed, of nearly all the methods of those who followed—is due to Euler.   The pioneer work done by him on the lunar problem has, in my opinion, never received the full credit which it deserves.   This may, perhaps, be partly due to the way in which he set forth his ideas ; but it is, I think, mainly owing to the fact that his work was immediately followed by that of Laplace, whose justly great reputation in every department of mathematics, and especially in celestial mechanics, has overshadowed the claims of his predecessor.   However this may be, Euler fully recognised the importance of the special method under consideration.   In the introduction to a paper published in 1768, "Réflexions sur la Variation de la Lune" (*Hist. Mem. Berlin Acad. Sc.* 1766, pp. 334–353), he states the problem to be considered in the paper as follows : "Déterminer le mouvement d'une Lune qui feroit ses révolutions autour de la Terre dans le plan de l'écliptique et dont l'excentricité seroit nulle, pendant